Claims:

1.   A method for generating landscape or portrait oriented tags embedded with error correctable data, comprising the steps of:

        using an encoder in the printing of a tag having a data area comprising data dots and a locator component comprising constant dots;

        using the tag encoder to obtain, from a stored tag format structure, required data in row-wise or column-wise directions, for both landscape and portrait orientations of the tag;

        the tag format structure being a dot based data package template containing a plurality of entries, each entry corresponding to a dot's position, each entry further indicating whether a dot is a data dot or a constant dot, and accordingly each entry having either fixed data bits or variable data bits.

2.   The method of claim 1, wherein the tag format structure comprises lines of data and is stored in an off-chip or remote memory, further comprising the steps of:

        accessing one line at a time; and

        generating, in the memory, two distinct copies of the tag format structure, one for landscape printing and one for portrait printing.

3.   The method of claim 2, further comprising the step of:

        storing the tag format structure on an external DRAM.

4.   The method of claim 2, further comprising the step of:

        locating the encoder on an ASIC and loading only a current line of the tag format structure at any one time.

5.   The method of claim 2, further comprising the step of:

        storing the two distinct copies are different from one another.

6.   The method of claim 2, further comprising the step of:

        storing the two distinct copies one copy is a ninety degree rotation of the other copy.

7.   The method of claim 1, wherein each entry of the tag format structure comprises bits including a selected bit and the entry is interpreted as indicating a data bit, or not, according to the selected bit and further comprising the step of:

        determining if the selected bit indicates that the entry is data, then interpreting a remainder of the entry as an address.

8.   The method of claim 1, wherein the tag format structure is comprised of one or more lines and further comprising the steps of:

scaling the tag by a factor of N, by scaling the number of entries in the tag format structure; and

scaling the tag format structure by replication of each entry N times and by replication of each

5   line N times.

9.   The method of claim 1, further comprising the step of:

providing a tag format structure in which dot positions have a relationship and the relationship takes into account a redundancy encoding of the data.

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10.   The method of claim 1, further comprising the steps of:

using the tag encoder to redundantly encode the data bits to conserve bandwidth.

11.   The method of claim 1, further comprising the step of:

15   providing the encoder with an input which defines the structure of a tag.

12.   The method of claim 1, further comprising the step of:

providing the encoder with an input which defines whether or not to redundantly encode the variable data bits or to treat the variable data bits as having been encoded.

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13.   The method of claim 1, further comprising the step of:

providing the encoder with an input which defines whether or not to redundantly encode the fixed data bits or to treat the fixed data bits as having been encoded.

25   14.   The method of claim 1, further comprising the step of:

providing the encoder with an input comprising a number of variable data bit records, each record contains one or more variable data bits for the one or more tags on a given line of tags.

15.   The method of claim 1, further comprising the step of:

30   printed the tags with an infrared absorptive ink that can be read with a tag sensing device.

16.   The method of claim 1, further comprising the step of:

using the encoder to merge encoded tag data with a basic tag structure and place dots in an output FIFO in a correct order for subsequent printing.

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17.   The method of claim 1, further comprising the step of:

generating encoded tag data from original data bits on-the-fly to minimize buffer space.

18. The method of claim 1, further comprising the step of:
printing each tag so as to have a background pattern further comprising a locator component.

5   19. The method of claim 18, wherein:
the locator component is circular.

20. The method of claim 1, further comprising the step of:
printing the dots as continuous tone dots.

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